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Relative effectiveness of monetary and fiscal policies on output growth in Turkey: an ARDL bounds test approach

Abstract

Research background: Effects of monetary and fiscal policy on output growth has been one of the major topics that economists have been investigating. Monetary and fiscal policies are tools for economists and policymakers to correctly direct the economy and facilitate the growth and development of the country. Accordingly, it is critically important for policy-makers in the area of economy to study the efficiency and the effectiveness of such policies. But, so far, there has been no generally accepted evidence suggesting the effectiveness of either the policy in Turkey or around the world. Instead, the dominance of either policy is subject to a change period to period and country to country.

Purpose of the article: The purpose of this study is to analyze the growth effectiveness of fiscal and monetary policies and then determine which of these two policies is more powerful in promoting economic growth in Turkey over the period 1998 and 2016.

Methods: To investigate the growth effectiveness of monetary and fiscal policies, we use some of the time series econometric techniques, such as ARDL Bounds testing, structural break unit root tests and Granger causality tests.

Findings & Value added: Monetary policy variable is creating only short-run effects on growth; but, it's not causing any Granger causality on it. On the other hand, fiscal policy variable has a long-run significant effect and causing to growth. Thus, the fiscal policy

seems to be more effective than monetary policy during examination period, implying the rethinking the implementation of both policies in Turkey. To the best of our knowledge, this study is the first attempt to investigate the relative effectiveness of economic policies on growth in Turkey in terms of both methods used and period chosen.

Introduction

Reacting to the economic conditions is generally seen as the main purpose of using monetary and fiscal policy instruments by policymakers. Even though monetary policy is mainly designed to respond to inflation, and fiscal policy to the state of public finance, both policies can be used to react to economic activity. As is mentioned in (Philippopoulos *et al.*, 2015), even though it is widely believed that the implementation of fiscal policy is more complex and controversial than that of monetary policy, the recent two developments, the Stability and Growth Pact of the EU and then more recent global recession led by 2008 financial crisis, have received a renewed debate about the comparative efficacy of monetary and fiscal policies. As is pointed out by (Guerguil *et al.*, 2017), because of large and prolonged growth and employment costs of the crisis, the limited effect of monetary policy when interest rates are stuck at the zero-lower-bound, and the necessity of increased public expenditure to avoid a "secular stagnation" in this environment, there is a great deal of consensus among economists and policy makers for the use of fiscal policy as a countercyclical instrument.

In the aftermath of 2008 crises, as is mentioned in Jawadi *et al.* (2016), assessment of whether fiscal policy and monetary policy can be influential tools to stabilize economy and fostering/boosting economic growth, especially for emerging market economies, like Turkey, has become one of the most important topic in academic research and policy arena. Still, the effectiveness of monetary policy in controlling inflation and boosting output is open to question. Similarly, there is no consensus about the macroeconomic effects of fiscal policy, since while large fiscal deficits can crowd out private spending, a protracted public investment-led fiscal stimulus can boost economic growth.

As Papaioannou (2018) argued, the effect of fiscal and monetary policy on growth remains one of the most controversial and debatable topics in modern macroeconomics. Unfortunately, as it is explained in section 2, provided empirical evidence, mainly depending on Keynesian economic theory and neoclassical predictions, so far seem to be far from producing conclusive evidence. On the one hand, Keynesians support that fiscal policy is the main policy tool to effect the output by supporting aggregate demand. On the other hand, neoclassical economists argue that expansionary

fiscal policy can hinder growth by crowding out the private sector of several European countries, which may in part be due to fiscal tightening measures.

The aim of this article is to evaluate the relative effectiveness of monetary and fiscal policies on growth in Turkey over the period of 1998 and 2016 by using ARDL Bounds test approach to co-integration. To the best of our knowledge, this study will be the first attempt to provide evidence about this long-lasting debate among academics and policy makers by using this method.

Besides this introduction, this article is structured as follows: Section 2 summarizes the monetary and fiscal policy stance in Turkey. Section 3 present theoretical and empirical literature. Section 4 outlines the econometric methodology and the data. Section 5 reports the empirical results and Section 6 concludes.

Monetary and fiscal policies in Turkey

In this section, while mainly focusing on 2000s, we briefly summarize the developments in the Turkish economy, since Monetary and fiscal policy stances in Turkey during study period are mainly shaped by neoliberal policies implemented starting in early 1980s. When we examine the growth performance of the Turkish economy in the post-war period, it is fair to conclude that Turkey has experienced volatile boom and bust cycles that have hindered stable growth. Turkey's macroeconomic instability prevented Turkey's convergence with the world's advanced economies, because of a range of factors including monetary policy, financial liberalization, fiscal profligacy, inadequate financial regulation, and exchange rate policies. Unfortunately, whatever the underlying causes have been in the past, the economy's volatile structure has been a major obstacle and problem for sustainable growth.

During the 1980s, Turkey initiated neoliberal policies with an orthodox stabilization policy, which also incorporated the first structural steps towards a market-based mode of regulation. Turkey transformed its industrial model away from import substitution policies toward more export-led growth, significantly opening up its economy to foreign capital and goods. The first phase of neoliberal policies in Turkey was successful in terms of its own policy goals. The first phase of reforms was followed by a gradual move towards trade liberalization in 1984 (which culminated in a Customs Union with the EU eleven years later) and uncontrolled liberalization of the capital account in 1989. Following the liberalization of its capital account,

the country experienced large inflows of capital and became increasingly dependent to them to achieve modest economic growth. On the other hand, the liberalization of the capital account in Turkey in 1989 has pushed the economy into an unstable and risky path, increasing the fragility of the domestic financial system substantially, leading to volatile and instable growth path, causing to rise in drains or 'leakages' out of inflows in relative terms, and the external debt, and attracting arbitrage-seeking and short-term capital ('hot money') flows, therefore, contributing to increase in external and internal instability (Özer, 2017). Thus, since 1989, the Turkish economy has experienced three "sudden stops" in which external financing rapidly dried up — in 1994, 2001 and 2008. These withdrawals of foreign capital were associated with significant falls in GDP growth (Özer, 2017).

During 1980s and 1990s, stance and scope of monetary and fiscal policies are mainly affected by developments in Turkish economy. As indicated in Şen and Kaya (2015), those years can be characterized as ones with a fragile banking sector, rising public debt, and large and persistent budget deficits, a non-independent central bank and a poor fiscal policy management. ıncreasing need of government to finance its budget deficit created significant adverse effects causing a crowding out in financial markets, increasing the degree of Dollarization. As it is pointed out in Yörükoğlu and Kılınç (2012), high reliance of fiscal policy on direct central bank advances inevitably restricted the effectiveness of monetary policy. But, following the devastating 2001 economic crisis, Turkey instituted serous reforms, including effective fiscal consolidation, an improved monetary policy framework by granting the central bank independence. After these reforms, the main focus of the central bank became the price stability. Towards this goal, the central bank implemented implicit inflation targeting (IT) between 2001 and 2005. And then, it started to adopt full-fledged IT between 2006 and 2010. In 2015, the bank integrated financial stability to IT. Finally, starting from 2016, the bank has showed stronger focus on structural factors. While the CBRT's overarching goal is to achieve price stability and financial stability, currently monetary policy is being explicitly used to address exchange rate, inflation, credit growth, GDP growth, and capital flow dynamics.

Literature review

The need for assessing the relative effectiveness monetary and fiscal policy on growth requires a careful documentation of related theoretical literature.

Thus, in this section, we first review the theoretical literature and then continue with summarizing the empirical literature.

Review of theoretical literature

As pointed out in Mencinger *et al.* (2017), there are two key macroeconomic policy tools that economic authorities can use to affect economic activity. These are fiscal policy and monetary policy. According to Bianchi and Ilut (2017), during the 1960s and 1970s the fiscal authority was the leading authority, whereas the monetary authority is true starting in the early 1980s. The Keynesian view influenced many scholars and by the 1950s it had dominated the mainstream economics, but it lost popularity during the inflationary 1970s, when it seemed ever more remote from the problems of that decade. In the 1960s and 1970s, Monetarist thought, which gave a new interpretation to the theory of macroeconomics on Milton Friedman's premise, emphasized that the main purpose of the economic policies should be control over the money supply, and ruled out the government intervention to economic activities (Kindleberger, 1986, p. 41). Even though Keynes strongly advocated using fiscal policy as the main macroeconomic policy to stop recessions, he did not also oppose to the idea that monetary policy surprises will change the investments through the channel of interest rates and anticipations. Unlike the Keynesians, Monetarists consider the use of fiscal policy as the main reason for economic instability (Meltzer, 1983, p. 14). Regarding policy efficiency, Monetarists believe that monetary policy is more efficient than fiscal policy, as oppose to Keynesians' belief of relatively more efficient fiscal policy.

As explained in detail in Twinoburyo and Odhiambo (2018), theoretical discussions about the role of economic policies affecting the economic activity, particularly monetary policy, have been in the centre of research of many models today, such as New Classical Model (NCM), real business cycle models (RBC), the New Keynesian Model (NKM) and New Consensus Model (NCM). Also, it should be reemphasized that the devastating adverse effects of the recent global recession of 2008–2009 and the fear of another great depression has caused an increase in the interest in Keynesian ideas and brought a new wave of attacks on classical tradition macroeconomics.

According to The New Classical Monetary Model, the monetary policy is neutral with respect to real variables. The New Classical real business cycle (RBC) theory asserts that money plays a little role in business cycles created by rational agents responding optimally to real shocks. Based on the assumptions of rational expectations and the continuous market clear-

ing, it can be concluded that while anticipated monetary policy will have no effect on the real GDP, unanticipated monetary policy would will have a temporary effect on real variables.

In new Keynesian models, prices and/or wages are temporarily inflexible, so that in response to outside shocks, with changes in fiscal or monetary policy, quantities adjust. In new Keynesian models, it is believed that while the monetary policy is neutral in the long-run, it can affect output in the short run.

The New Consensus Model, which is considered as a product of the New Classical Model and New Keynesian Model, assumes the rational expectations and the short-run wage and price rigidities. According to Twinoburyo and Odhiambo (2018), it is also the main approach behind the inflation targeting regime, where while price stability is the primary aim, growth is secondary. Considering the interest rates as the sole monetary policy instrument, this approach emphasises that monetary policy should focus on short-run output stabilization and long-run price stability. Within this policy framework, while monetary policy using mainly short-term interest rates as a policy instrument can affect the demand side of the economy, it eventually moves towards the long run supply side equilibrium. This theory suffers from a lot of criticism because of its assumptions and its practicability. Thus, according to Fontana (2010), the dominance of the NCM models determining the scope of monetary policy 'not only ignites the debate on the earlier theories' but it also raises new questions about the role of monetary policy on output.

In the aftermath of the recent financial and economic crisis, there are still some fundamental divergences in the academic literature on the effects of fiscal policy. Relying on Keynesion theory, some economists suggest the use of fiscal policy as a countercyclical fiscal policy measures, such as Auerbach and Gorodnichenko, (2012; 2013), Krugman (2015), Romer (2012). According to Attinasi and Klemn (2016), while the traditional Keynesian theory, which is a standard IS-LM model, predicts positive and large fiscal multipliers and assumes that private consumption increases in response to a spending shock, in Real Business Cycle models, fiscal policy is unable to influence output as government spending crowds out private consumption via a Ricardian (negative) wealth effect. In New-Keynesian models, the value of multipliers is found somewhere in between those predicted by the Keynesian theory and the RBC models when assuming some heterogeneity across private agents by including so-called "non-Ricardian" households, which are assumed to be consuming their after-tax disposable income in each period. Also, some economists such as Alesina and Ardagna (2010), Hebous (2011), Monacelli and Perotti (2008) and Ravn *et*

al. (2007), in line with neoclassical economic theory or the modern economic paradigm, strongly oppose to enacting such fiscal measures. Thus, the existence of this scepticism about the theoretical and empirical framework of fiscal policy has caused confusions in the decisions of policymakers regarding the implementation of appropriate fiscal measurements to stabilize the business cycle and revive economic activity. As a result, recently, world witness implementation of Keynesian fiscal stimulus measures and reduction of government spending, as well as tax increases. As is pointed out in Mencinger *et al.* (2017), these fiscal measures can have a significant effect on stabilization of economic activity and fostering/boosting economic growth, affecting expectations and confidence about the future fiscal stance.

Review of related empirical literature

The effect of fiscal and monetary policies on growth has generated a large number of empirical studies with mixed findings using cross-sectional, time series and panel data, such as, OLS, Panel data models, VAR model, VEC Model and ARDL Model. The findings of the majority of studies indicate that fiscal and monetary policies are associated with growth. In the studies, the results differ greatly according to the estimation techniques used and/or the variable chosen.

Anderson and Jordan (1968) tested the relative effectiveness of monetary policy and fiscal policy in the United States using quarterly data, and found that the effect of money policy proxied by money supply is greater, more predictive and faster than that of fiscal policy proxied by government expenditure on economic growth, suggesting the use of monetary policy to stabilize economy.

Unlike the findings of Anderson and Jordan (1968), the results of study of De Leeuw and Kalshbrenner (1969) indicated that fiscal policy creates greater effect on growth than monetary policy.

Ajayi (1974) estimated the effects of the variables of fiscal and monetary policies on economic growth using ordinary least square technique and beta coefficients. He found that the impact of monetary policy is larger and more predictable then fiscal policy on growth in Nigeria.

Batten and Hafer (1983) investigated the generality of the St.Louis approach by applying it to Canada, France, Germany, Japan, the United Kingdom and the United States. They concluded that money growth is more important than fiscal actions in determining GNP growth.

Chowdhury (1986) examined the relative effectiveness of the two policies in Bangladesh by using St. Louis equation and the ordinary least

square (OLS) technique, and concluded that fiscal actions have a greater impact on economic activity than monetary actions in Bangladesh.

According to the findings of the study of Cardia (1991), both policies create small effects on economic growth.

Olaloye and Ikhide (1995) tested the relative effectiveness of monetary and fiscal policy by estimating a slightly modified form of the basic St. Louis model using monthly data over the period of 1986 and 1991 in Nigeria. They concluded that fiscal policy creates greater effects on the economy than that of monetary policy.

By using the co-integration and error correction framework, Ajisafe and Folorunso (2002) examined the relative efficacy of monetary and fiscal policies in Nigeria and found that monetary policy has a greater effect on economic activity fiscal policy.

Ali *et al.* (2008) examined the effects of fiscal and monetary policy on economic growth in South Asian countries using annual data from 1990 to 2007 and Autoregressive distributed lag model. They indicated that money supply had a positive and significant effect on economic growth in the short and long run; thus, they concluded that monetary policy is more powerful than fiscal policy in supporting economic growth in South Asian countries.

Khosravi and Karimi, (2010) examined the influence of fiscal policy and monetary policy on growth in Iran, using the ARDL Bounds test approach to co-integration, providing some evidence of negative the impact of exchange rate and inflation on economic growth and significant positive effect of the government spending on GDP growth in Iran.

Senbet (2011) used VAR analysis to investigate the relative effectiveness of fiscal and monetary policies on output in the USA. They found the positive significant impact of money supply on economic growth.

By using regression and correlation analysis, Kareem *et al.* (2013) investigated the impact of fiscal and monetary policies on the economic growth in Nigeria and provided some evidence that both narrow and broad definitions of money have significant positive effect economic growth in Nigeria.

Based on the results of the recursive VAR model, Mutuku and Koech (2014) found that the monetary policy did not have a significant impact on the real output.

Havi and Enu (2014) examine the relative effectiveness of monetary policy and fiscal policy on economic growth in Ghana over the period of 1980 and 2012 by using regression analysis, and found that money supply had a positive significant impact on the Ghanaian economy.

Şen and Kaya (2015) found that both monetary and fiscal policies have significant effects on growth in Turkey. But, the more effective tool in

stimulating economic growth is the monetary policy. These findings suggest that both policies significantly influence growth; they should be used jointly but in an efficient manner.

Bokreta and Benanaya (2016) examined the relative effectiveness of monetary and fiscal policy in Algeria using co-integration and vector error correction modelling, and found that in the long-run, the impact of government expenditures is positive, while the effect of taxes is negative on growth, concluding that fiscal policy is more powerful then monetary policy in promoting economic growth in Algeria.

Extensive work has been done in an attempt to establish the impact of monetary and fiscal policy on economic growth, yet with little consensus to date. In other words, even though there is a wide range of studies on the existing relationship between monetary policy, fiscal policy and economic growth, the relative effectiveness of these policies on growth remains inconclusive. The effects of monetary and fiscal policies on growth differ according to countries, sample period and methods used. Therefore, it will be difficult to draw general conclusion and propose some policy measures based on the existing studies.

Methodology and data

To examine the relative effectiveness of monetary and fiscal policies on output growth, we used the equation developed by Andersen and Jordan (1968), also called St. Louis equation. This equation can be expressed as:

$$Y=f (F, M, Z) \tag{1}$$

where: Y represents the economic performance variable; F fiscal policy variables; M monetary policy variables, and Z represents other variables influencing economic performance.

To determine the existence of long-run equilibrium relationships between variables, which is co-integration, we use the Autoregressive Distributed Lag (ARDL) Bounds testing approach developed by Pesaran and Shin (1998) and later expanded by Peseran *et al*. (2001). One of the most important advantages of the ARDL method is that the variables used in the analysis can have mix of different degrees of integration; that is, they can be a mix of I (0) or I (1). Also, with the help of using this approach, one is allowed to estimate short-run, long-run effects simultaneously by forming an Error Correction Model (ECM) derived from the ARDL model without loss of long-term information.

Based on the Equation (1), it is plausible to express the long-run relationship between Lgdp_sa, lcons_sa and pr in log-linear form, with a view of testing the long-run, short-run and causality relationships between these variables in Turkey as follows:

$$lgdp\_sa_t = \beta_0 + \beta_1 lcons\_sa_t + \beta_2 pr_t + \beta_3 d2008q3 + \varepsilon_t \quad (2)$$

where: lgdp_sa is the log of Real GDP; lcons_sa is log of government final consumption expenditure, pr is policy rate and d2008q3 is dummy variable for the third quarter of 2008.

An unrestricted error correction representation of the ARDL framework of Equation (2) can be written as:

$$\Delta lgdp\_sa_t =$$
$$a_0 + \sum_{i=1}^{p} \theta_i \Delta lcons\_sa_{t-i} + \sum_{i=1}^{p} \vartheta_i \Delta pr_{t-i} + \delta_1 lcons\_sa_{t-1} + \quad (3)$$
$$\delta_2 pr_{t-1} + \delta_3 lgdp\_sa_{t-1} + \varphi d2008q3 + v_t$$

In order to test for existence of a long-run relationship, that is, to test the existence of co-integration, between economic growth, government final consumption expenditure and policy interest rate, we first estimate Equation (3) by ordinary least squares (OLS) and then carry out an F-test for joint significance of the coefficients of the lagged levels of the variable.

Thus, the null hypothesis of no co-integration among the variables in Equation (3) is:

$$H_o: \delta_1 = \delta_2 = \delta_3 = 0$$

against the alternative hypothesis of cointegration

$$H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq 0$$

To determine the outcome of the test, the Wald-test (F-statistic) is used. The asymptotic distribution of the F-test is non-standard under the null hypothesis of no co-integration among the variables, and depends on whether variables included in the ARDL model are I(0) or I(1), the number of explanatory variables, whether the ARDL model contains an intercept and/or a trend; and the sample size. Pesaran and Shin (1998) and Pesaran *et al.* (2001) have provided two critical values. The lower critical bound assumes all the variables are I (0), and the upper bound assumes that all the variables are I (1).

When the sample value of F-statistic is greater than the upper bound critical value, reject the H_0 and conclude that the variables are co-integrated. If the computed value F-statistic is below the lower bound critical value, do not reject the H_0 and conclude that there is no co-integration among the variables. Finally, if the computed F-statistics falls between the lower and upper critical values, the result will be inconclusive, and in this case one can test the statistical significance of speed of adjustment coefficient. Significant speed of adjustment coefficient indicates the existence of co-integration among the variables.

By adopting ARDL approach, we can estimate the short- and long-run dynamic relationships. Therefore, Equation (3) can be rewritten as the error correction version of ARDL model as follow:

$$\Delta lgdp\_sa_t = a_0 + \sum_{i=1}^{p} \theta_i \Delta lcons\_sa_{t-i} + \sum_{i=1}^{p} \sigma_1 \Delta pr_{t-i} + \rho d2008q3 + \gamma ecm_{t-1} + u_t \tag{4}$$

where: ecm_{t-1} is the error correction model term which has to be negative and statistically significant and represents the speed of adjustment to long run equilibrium following a short run shock.

For the diagnostic checking, we test the presence of serial correlation and heteroscedasticity in the errors and normality of errors as well. Finally, by using CUSUM and CUSUMSQ tests, we checked the stability of parameters of the model.

To examine the effects of monetary and fiscal policies on economic growth in Turkey, we use quarterly data over the period of 1998Q1 and 2016Q3. The data is obtained from the Central Bank of Turkey database. In the study, the Real GDP is used as proxy for the real output growth, while, as mentioned in Angelopoulos and Philippopoulos (2007), following the common practice, Government Final Consumption Expenditures has been used as proxy for fiscal policy. The overnight borrowing rate, called the Policy Interest rate, is used as proxy for monetary policy, since Central Bank of the Republic of Turkey (CBRT) has been using this rate as a policy rate within the framework of full-fledged Inflation Targeting (IT), since 2006.

Empirical results

Prior to using our approach to co-integration, we first determined the degree of the integration of the variables used in the study. Since sample period includes the devastating economic crisis of 2001 and global crises of

2008, to determine the degree of integration of variables, we carried out structural-break unit root tests of Zivot-Andrew. Table 1 shows the results of structural break unit root tests. Based on the results in Table 1, we conclude that the variables, lgdp_sa and lcons_sa are the first difference stationary, that is I (1), and pr is level stationary variable, that is, I (0). So, the variables have a mixed degree of integration. Thus, the results of unit root test results support the decision to use ARDL Bounds test approach to test the existence of co-integration of among the variables.

To carry out this test, we first determine the best ARDL model by using the Akaike Information Criterion (AIC) and then estimate UECM in Equation (3). Table 2 presents the results of ARDL Bounds tests.

Based on the results in Table 2, we reject the null hypothesis of no co-integration, since the computed value of F-statistics (13.71009) is greater than table upper bound critical value. This conclusion indicates that there is a long-term equilibrium relationship among variables. Therefore, we can use estimates of short and long-run parameters for further analysis given in Table 3.

When we examine the estimation results in Table 3, we can conclude that sign of the coefficients of both monetary policy and fiscal policy variables are positive implying that they have a positive impact on growth. But, while positive effects of monetary policy variable are significant in the short run, they don't have significant effect on growth in the long run. On the other hand, fiscal policy does have positive and significant effect on growth in the long run. Moreover, 2008 crises dummy variable (2008q3) has a negative significant effect on growth. Finally, the speed of adjustment coefficient, coefficient of ecm(-1), is negative and statistically significant as expected, indicating that while approximately 9% of disequilibrium is corrected in each quarter, full adjustment to equilibrium takes about 11 quarters.

The diagnostic tests result in Table 3 show the robustness of the estimates not indicating any evidence of neither autocorrelation, heteroscedasticity nor not normally distributed errors. Also, CUSUM and CUSUMSQ tests indicate stable parameters for the model.

Table 4 reports results of Granger causality tests. The short-run Granger test results in Table 4 show that there is a bidirectional short-run causality running from lcons_sa to lgdp_sa. This result also reinforces the fact that fiscal policy variable is relatively more effective than that of monetary policy during the sample period. And also, these results should be interpreted cautiously.

First of all, before the Global Financial Crisis there was a widely accepted belief for the use of the monetary policy to affect economic activity

and to fight against inflation. Secondly, the fiscal policies used to be considered polices only harming economies and creating serious adverse effects. But, latest global crises have caused a significant shift in the way that the macroeconomists and policy makers evaluate the relative importance of those policies. In other words, as mentioned in Da Silva and Vieria (2017), besides the renewed effect of recent crises on debates regarding the relative effectiveness of monetary and fiscal policy, it is fair to say that the conduct of monetary policy has fuelled ongoing debates and research throughout the world. These discussions were further deepened with the advent of the inflation targeting regime as a nominal anchor of the economy, which is a framework adopted by Turkey. The crisis also taught us that price stability is not enough to stabilize the economy as a whole, and fiscal sustainability is necessary to strengthen actions taken by monetary authorities. Moreover, the crisis has shown that monetary policies are ineffective after interest rates are set at zero, that expansionary fiscal policies must come to the forefront, and that corrective fiscal policies are therefore an effective instrument. As a result, economic policies have been reshaped. Thus, for the purpose of financial stability and to foster/boost the economic growth, the Central banks should implement not only monetary policies, but also some macro prudential policies. In other words, the coordination of both policies is also required. Thus, the Central banks and governments have to take several actions to prevent economic activity from falling sharply. These included the use of expansionary monetary and fiscal policies, to stimulate aggregate demand, followed by a fiscal consolidation process in several countries. It should be also understood that focusing on a single instrument, overnight interest rate in Turkey, ignoring the fact that without money and exchange rate roles, and inadequate treatment of markets, the independent central banks puts its operation usefulness into jeopardy, particularly for developing countries and open economies.

Conclusions

In this study, we investigate the relative effectiveness of monetary policy and fiscal policy on economic growth in Turkey over the period of 1998Q1–2016Q3 by using ARDL Bounds testing approach to cointegration and Granger causality tests. The results of the study indicate that even though monetary policy has a positive short-run effect on growth, the fiscal policy matters for growth both in the short run and long run. These results are also supported by the Granger causality tests indicating bidirectional causality running from fiscal policy variable to growth. Based on

the results of the study, we conclude that fiscal policy is more effective than monetary policy to affect the economic growth in Turkey during the sample period.

The empirical results and the conclusion should be interpreted cautiously. First of all, it should be noted that different macroeconomic policies can play critical roles in promoting sustainable economic stability in a country, which eventually create and environment for the faster economic growth. Secondly, monetary and fiscal policies are policy tools available for promoting sustainable growth in the economy. Thirdly, to have sustained and healthy economic growth, the coordination of monetary and fiscal policies are necessary and the absence of this coordination leads to a poor overall economic performance, even can harm the economy. Even though these policies are conducted and implemented by two separate authorities in Turkey, it should be remembered that they are mutually dependent; requiring a consistent and sustainable policy-mix framework, to guarantee harmonized monetary and fiscal policy and avoid possible inconsistencies.

Thus, to promote sustain and healthy economic growth, the central bank should focus on using effective monetary policy measures necessary to bring down the inflation to targeted rate and favourable interest rate. And also, policy makers in Turkey should know the fact that the accommodative monetary and fiscal policies together are necessary not only for macroeconomic stabilization, but also to foster/boost Turkish economy.

Whatever the empirical findings of the study are, it should be remembered that the relative effectiveness of the two policies still remains a puzzle for academics and in macroeconomic policy management. It should also not be forgotten that we cannot reach conclusive results concerning institutional, developmental and political country-specific elements, methodological approaches, variables chosen, treatment, etc. Therefore, the study always has some limitation and the results of the study will be always subject to criticism and scepticism. To avoid this criticism and decrease the limitations, we need a further study to focus on all these issues. Also, we know the fact that the relative effectiveness of fiscal and monetary policies in Turkey strongly and directly related to the prevailing economic and political conditions and policies adopted at any point in time.

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Annex

Table 1. Breakpoint Unit Root Test

Variables	Breakpoint Unit Root Test					
	Level			**First Difference**		
	t-stat.	**Prob.**	**Break date**	**t-stat.**	**Prob.**	**Break date**
lgdp_sa	0.6250	>0.99	2009Q2	-7.3694	<0.01	1999Q2
lcons_sa	-3.3496	0.7595	2003Q1	-13.6170	<0.01	2004Q4
pr	-6.4221	<0.01	2004Q2	-	-	-

Note: * denotes the rejection of the no cointegration at 1% level of significance.

Table 2. The Results of ARDL Cointegration Test

Model	Optimal lag length	F-statistics	Bound critical value		Outcome
			I(0)	I(1)	
lgdp_sa=f(lcons_sa, pr) d2008q3	(1,2,5)	13.71009*	4.13	5	cointegration

Note: * denotes the rejection of the no cointegration at 1% level of significance.

Table 3. Long-run and Short-run Estimations

Dependent variable = lgdp_sa			
Variable	**Coefficient**	**t-statistic**	**Prob. values**
Long-run results			
CONSTANT	5.2455	3.0393	0.0037
LCONS_SA	0.8317	9.0338	0.0000
PR	0.0053	0.9888	0.3275
D2008Q3	-0.4990	-1.7930	0.0789
Short-run results			
D(LCONS_SA)	0.1092	2.0556	0.0450
D(LCONS_SA(-1))	-0.0796	-1.4087	0.1650
D(PR)	-0.0004	-0.8988	0.3730
D(PR(-1))	-0.0009	-2.7747	0.0077
D(PR(-2))	-0.0005	-1.8803	0.0658
D(PR(-3))	-0.0002	-1.1756	0.2452
D(PR(-4))	-0.0002	-1.7338	0.0890
D2008Q3	-0.0445	-5.2062	0.0000
ecm(-1)*	-0.0891	-7.6201	0.0000
Test	**Test statistic**		**Probability**
Normality	22.8879		0.00001
Heteroscedasticity	1.0357		0.4302
Serial correlation	0.5658		0.6887
CUSUM		Stable	
CUSUMSQ		Stable	

Note: * denotes the rejection of null hypothesis at 1% level of significance.

Table 4. Short-run Granger Causality

Variables	Wald Test			
	Test statistic		**Probability**	
	F-statistic	Chi-square	F-statistic	Chi-square
lcons_sa→lgdp_sa	2.4987*	7.4960*	0.0700	0.0577
pr→lgdp_sa	1.5124	9.0742	0.1930	0.1694

Note: * denotes the rejection of null hypothesis at 10% level of significance.